

What is claimed is:

1. A high speed interface device, comprising:

a DRAM unit for generating first clock and first clock bar signals

5 which do not have a phase difference from a main clock signal, and second clock and second clock bar signals having 90° phase difference from the first clock and clock bar signals during a write operation, storing an inputted 4 bit data in one period of the main clock signal according to the first and second clock and clock bar signals, synchronizing the stored data with data strobe signals according to the first and second clock and clock bar signals during a read operation, and outputting a 4 bit data during one period of the main clock signal; and

10 a controller for transmitting a command, address signal and data signal synchronized with the main clock signal to the DRAM unit during the write operation, and receiving data signals from the DRAM unit during the read operation.

2. The device according to claim 1, further including a circuit for generating the data strobe signals, comprising:

20 a first delay unit for receiving the first clock signal;

a first buffer unit connected between an output terminal of the first delay unit and an output terminal for outputting a first data strobe signal;

a second delay unit for receiving the second clock signal; and

25 a second buffer unit connected between an output terminal of the second delay unit and an output terminal for outputting a second data strobe signal.

3. The device according to claim 1, wherein the DRAM unit comprises:

30 a third buffer unit for receiving the main clock signal and a main

clock bar signal from the controller;

a DLL unit for delay locking output signals from the third buffer unit, and generating the first clock and first clock bar signals;

a fourth buffer unit for buffering and outputting the first clock and first clock bar signals from the DLL unit, and transmitting the first clock and first clock bar signals to the DLL unit;

a phase shift unit for receiving the first clock and first clock bar signals from the DLL unit, and generating the second clock and second clock bar signals;

a fifth buffer unit for receiving and buffering output signals from the phase shift unit;

a write latch unit for storing inputted write data according to the first and second clock and first and second clock bar signals; and

a read latch unit for storing read data from a read sense amp according to the first and second clock signal and first and second clock bar signals.

4. The device according to claim 3, wherein the write latch unit comprises:

a first latch unit for storing a first data from an input buffer according to the first clock signal during the write operation;

a second latch unit for storing a second data from the input buffer according to the second clock signal during the write operation;

a third latch unit for storing a third data from the input buffer according to the first clock bar signal during the write operation; and

a fourth latch unit for storing a fourth data from the input buffer according to the second clock bar signal during the write operation.

5. The device according to claim 3, wherein the read latch unit comprises:

a first latch unit for storing a first data from the read sense amp unit

according to the first clock signal during the read operation;

a second latch unit for storing a second data from the read sense amp unit according to the second clock signal during the read operation;

a third latch unit for storing a third data from the read sense amp unit

5 according to the first clock bar signal during the read operation; and

a fourth latch unit for storing a fourth data from the read sense amp unit according to the second clock bar signal during the read operation.

20070808 09:10:11